

What is claimed is:

1. A crystal unit comprising a crystal blank for a vibrator and a reinforcing plate that includes a through-hole, said crystal blank and said reinforcing plate being joined by direct bonding.

2. A crystal unit according to claim 1, comprising:  
a pair of excitation electrodes, one excitation electrode being formed on one of two major surfaces of said crystal blank, and the other excitation electrode being  
5 formed on the other major surface of said crystal blank, said excitation electrodes corresponding to location of said through-hole, and  
extending electrodes that extend away from respective excitation electrodes.

3. A crystal unit according to claim 2, wherein an Si-O-Si chemical bond is formed between said crystal blank and said reinforcing plate as said direct bonding.

4. A crystal unit according to claim 2, wherein an Si-Si chemical bond is formed between said crystal blank and said reinforcing plate as said direct bonding.

5. A crystal unit according to claim 1, wherein said

crystal blank is constituted by an AT-cut quartz crystal plate, and said reinforcing plate is constituted by a Z-cut quartz crystal plate.

6. A crystal unit according to claim 2, wherein said crystal blank is constituted by an AT-cut quartz crystal plate, and said reinforcing plate is constituted by a Z-cut quartz crystal plate.

7. A crystal unit according to claim 2, wherein said crystal blank is constituted by an AT-cut quartz crystal plate; said reinforcing plate is constituted by an AT-cut quartz crystal plate; and one of said extending electrodes  
5 extends over, of side surfaces of said through-hole, an inclined surface that is oblique to a crystallographic Z'-axis of a quartz crystal that constitutes said reinforcing plate.

8. A crystal unit according to claim 1, wherein said crystal blank is constituted by an AT-cut quartz crystal plate, and said reinforcing plate is constituted by a glass plate.

9. A crystal unit according to claim 2, wherein said crystal blank is constituted by an AT-cut quartz crystal plate, and said reinforcing plate is constituted by a glass

plate.

10. A method of fabricating a crystal unit,  
comprising steps of:

providing a through-hole corresponding to a formation  
location of each crystal unit in a first wafer that  
5 corresponds to a plurality of said crystal units;

directly bonding said first wafer in which said  
through-holes have been formed to a second wafer  
constituted by a quartz crystal plate to obtain a laminate;

forming excitation electrodes that are provided on  
10 both major surfaces of said second wafer corresponding to  
the formation location of each of said crystal units, and  
extending electrodes that extend away from said excitation  
electrodes, respectively; and

dividing said laminate into individual crystal units.

11. A method of fabricating a crystal unit according  
to claim 10, wherein said first wafer is constituted by a  
Z-cut quartz crystal plate, and said second wafer is  
constituted by an AT-cut quartz crystal plate.

12. A method of fabricating a crystal unit according  
to claim 10, wherein said first wafer is constituted by an  
AT-cut quartz crystal plate, and said second wafer is  
constituted by an AT-cut quartz crystal plate.

13. A method of fabricating a crystal unit according to claim 12, wherein said extending electrode, which is connected to said excitation electrode that is formed on the major surface of said second wafer that is the through-hole side, is formed on an inclined plane that is oblique to the Z'-axis of the quartz crystal and that occurs in said through-hole.

14. A method of fabricating a crystal unit according to claim 10, wherein said first wafer is constituted by a glass plate, and said second wafer is constituted by an AT-cut quartz crystal plate.

15. A method of fabricating a crystal unit, comprising steps of:

directly bonding a first wafer that corresponds to a plurality of crystal units to a second wafer that is constituted by a quartz crystal plate to obtain a laminate; forming holes that correspond to a formation location of each of said crystal units in said laminate from the major surface of said first wafer that is exposed as far as an interface of said first wafer and said second wafer;

forming excitation electrodes that are provided on both major surfaces of said second wafer that correspond to the formation location of each of said crystal units, and extending electrodes that extend away from excitation

electrodes, respectively; and

15       dividing said laminate into individual crystal units.

16. A method of fabricating a crystal unit according to claim 15, wherein said first wafer is constituted by a Z-cut quartz crystal plate, and said second wafer is constituted by an AT-cut quartz crystal plate.

17. A method of fabricating a crystal unit according to claim 15, wherein said first wafer is constituted by an AT-cut quartz crystal plate, and said second wafer is constituted by an AT-cut quartz crystal plate.

18. A method of fabricating a crystal unit according to claim 17, wherein an extending electrode that is connected to said excitation electrode that is formed on the major surface of said second wafer that is the through-hole side are formed on an inclined surface that is oblique to Z'-axis of a quartz crystal and that occurs in said through-hole.

19. A method of fabricating a crystal unit according to claim 15, wherein said first wafer is constituted by a glass plate, and said second wafer is constituted by an AT-cut quartz crystal plate.